5.12 ROADS AND RIGHTS-OF-WAY

There are approximately 1000 miles of streets, roads, and highways in the Lake Tahoe Region. Past road construction, both for public streets and highways and for timber harvest and other purposes on USFS and private forest lands, has contributed significantly to sediment and nutrient loading to Lake Tahoe. Sediment loading from new subdivisions and associated roads has been a particular problem (see the section of this Chapter on development restrictions). Existing unpaved roads, and unstabilized cut and fill slopes, drainage ditches, and road shoulders continue to act as sediment sources. Winter road maintenance, including sanding and the use of deicing chemicals including salt, affects stormwater quality. The 208 Plan (TRPA 1988, Vol. I, page 88) concluded that limited information indicates that all components of the highway transportation system have serious impacts on water quality. Roads also increase impervious surface, magnifying surface runoff and often directing it toward surface waters.

Because of the significance of roads in erosion problems on forest lands, the USFS's Cumulative Watershed Effects methodology for assessing watershed problems (USFS 1988) uses “equivalent roaded acres” as a measure of disturbance. Erosion problems on forest roads are similar to those associated with offroad vehicle use (see the section of this Chapter on outdoor recreation).

While TRPA's Transportation and Air Quality Plan (TRPA 1992) has the goal of reducing dependence on private automobiles, it calls for the construction of, or the study of, a variety of new road segments. In 1980, the State Board determined that construction of new roads to handle the increased traffic projected for the Lake Tahoe Basin would cause serious water quality problems. The most serious water quality problems threatened by new highway construction in the Lake Tahoe Basin stem from encroachment of SEZs and construction in high erosion hazard lands. The State Board concluded that construction of new roads in high erosion hazard lands or SEZs would cause water quality problems which far outweigh any benefits in traffic improvement.

Maintenance of roads and parking lots is an important means of controlling stormwater pollutants at the source. However, maintenance activities may in themselves create water quality problems. Routine road shoulder maintenance can repeatedly disturb soils and prevent stabilization. An ongoing problem in the Tahoe Basin is associated with the clearance of roadside drainage areas along streets and highways without curbs. Annual use of a grader to clear drainageways often removes material from the toes of slopes and ensures continual erosion. This problem has been acknowledged by several public works agencies and is one of the primary justifications for installing curbs and gutters.

Road maintenance requirements are not always proportional to traffic use. In the Lake Tahoe Basin, weather is more likely to increase maintenance needs than the amount of traffic. The use of road deicing chemicals (also discussed in Chapter 4) is of special concern in the Lake Tahoe Basin because the death of vegetation from road salt can contribute to increased erosion.

Control Measures

Erosion Problems

Except where roads are essential for fire control or for other emergency access, erosion from dirt forest roads in the Lake Tahoe Basin should be controlled through closure, stabilization and drainage control, and revegetation.

Wherever possible, roads must be eliminated from high erosion hazard lands and Stream Environment Zones. For some of the roads which are not closed, protective surfacing, relocation, or installation of drainage facilities will be necessary. Best Management Practices should be required for all dirt roads which are not closed, stabilized, and revegetated.

The U.S. Forest Service, Lake Tahoe Basin Management Unit (LTBMU) has an ongoing watershed restoration program which includes closing and revegetating some roads, construction of bridges to prevent erosion at stream crossings, and installation of roadside drainage controls.

Revegetation, resurfacing, or other measures to control erosion from dirt roads on private forest lands should be enforced through regulatory programs adopted by local and regional agencies. Where these agencies have not made a commitment to implement controls, waste discharge requirements and cleanup

orders issued by the Lahontan Regional Board shall require landowners to correct erosion problems from dirt roads. Regulatory programs should include an inventory of old forest roads to identify the problems needing correction. TRPA and the Lahontan Regional Board have the authority to require the performance of remedial erosion control work on private forest lands.

The 208 Plan states that management practices for roads should be geared toward infiltration of runoff and stabilization of unstable drainages, slopes, and shoulders. The necessary practices include both capital improvements and proper operation and maintenance. The main implementing agencies are local units of government, improvement districts, state highway departments and state and federal land management districts.

The BMP Handbook (208 Plan, Vol. II) describes the appropriate BMPs for streets, roads and highways. As described in the introduction above, TRPA can require BMP implementation as a condition of approval for both new road construction, and road alterations. TRPA (1987, Ordinance Chapter 27) requires that all development requiring vehicular access be served by paved roads, with limited exceptions. TRPA's BMP retrofit program includes requirements for paving of unpaved roads and driveways.

Roads and Discharge Prohibitions

The impacts of road construction associated with lot and block subdivisions were one of the major reasons for the adoption of the prohibitions against discharge or threatened discharge due to the development of new subdivisions in the Lake Tahoe Basin (see the section of this Chapter on prohibitions). The 208 Plan (Vol. I) states that construction of new road networks, such as would be necessary to serve new subdivisions, should be avoided. Regional Board staff should carefully review **any** Tahoe project which would include new access road systems with potential impacts similar to those of a subdivision.

Exemptions from the TRPA and Regional Board prohibitions related to SEZ disturbance and excess land coverage may be allowed for road and highway construction projects if specific findings are made (see the section of this Chapter on development restrictions). Because of the problems with new road construction identified above, special consideration should be given to reasonable alternatives such as transit, ridesharing, and large employer transportation management programs which will preclude the need for exemptions. Wherever possible, existing structures or fills should be used when SEZs must be crossed. The State Board concluded in 1980 that in contrast to new highway construction which would affect large areas, the amount of land required for public transportation facilities (such as road widening for bus lanes or bikeways) would be insignificant, and would occur along existing transportation corridors instead of in previously undeveloped areas.

Maintenance Problems

To reduce problems associated with annual clearance of roadside drainage areas, TRPA has made a commitment to meet with road maintenance organizations to develop improved practices, which may be added to its BMP Handbook in the future. Remedial erosion control projects can reduce the amount of general road maintenance required throughout the year. Once these projects have been successfully implemented, there will be less mud flowing onto roads, less regrading of roadsides to maintain proper slopes, and fewer cases of roads being undermined by runoff.

Street and parking lot sweeping are among the most important control measures for onsite problems. The revised BMP for street sweeping discusses the efficiency of different types of sweepers and requires sweeping at least once a year. The reduction in dissolved nutrients will be minor, but the reduction in particulate bound nutrients from street sweeping will be comparable to the reduction in suspended sediments. Street and parking lot sweeping also helps prevent clogging of infiltration facilities.

Proper management of runoff from areas of intensive vehicular use requires installation of onsite drainage facilities and adherence to operating practices to control water quality deterioration. A program of intensive maintenance, including periodic vacuum sweeping and cleanup of debris, is required in all cases. Drainage systems should be designed to convey runoff to the treatment or infiltration facility and then to a stable discharge point.

Large parking lots have high priority in the Regional

Board's strategy for retrofit of BMPs to existing development. (See the discussion of this program in the section of this Chapter on offset.) The Regional Board has adopted maintenance waste discharge requirements for public works departments and utility districts in the Lake Tahoe Basin, and considers placing new public works projects involving road maintenance under its general waste discharge requirements applicable to small scale Tahoe Basin projects. The Board also regulates road maintenance activities through its municipal stormwater NPDES permits (see the "Stormwater" sections of this Chapter and of Chapter 4).

Snow and Ice Control

The Regional Board may allow the use of road salt to continue in the Lake Tahoe Basin as one component of a comprehensive winter maintenance program. However, the Regional Board should continue to require that it be applied in a careful, well-planned manner, by competent, trained crews. Should even the "proper" application of salt be shown to cause adverse water quality impact, the Regional Board should consider requiring that it no longer be used in the Tahoe Basin. Similarly, should an alternative deicer be shown to be effective, environmentally safe, and economically feasible, its use should be encouraged in lieu of salt. Stormwater permits, which may include controls on deicing chemicals, are discussed earlier in this Chapter.

Remedial erosion and drainage control projects can reduce the need for ice control on roads by collecting snowmelt runoff and conveying it in stable drainage systems rather than allowing it to flow across roadways where it can freeze in thin layers which require ice control for public safety.

The 208 Plan (Vol. I, page 146) provides that all persons engaged in public snow disposal operations in the Tahoe Region shall dispose of snow in accordance with the management standards in the BMP Handbook. This plan also requires all institutional users of road salt to keep records showing the time, rate, and location of salt application. State highway departments and other major users of salt and abrasives are required to initiate a tracking program to monitor the use of deicing salt in their jurisdictions. Annual reports to TRPA must include information on the rate, amount, and distribution of use. In addition, the 208 Plan requires that removal of snow from individual parcels be limited to structures, and paved and unpaved areas necessary for parking or providing safe pedestrian access. Snow removal from dirt roads is subject to TRPA regulation. When TRPA approves snow removal from an unpaved road it shall specify required winterization practices, BMPs, the specific means of snow removal, and a schedule for either paving the dirt road or ceasing snow removal.

Heavily used roads and driveways requiring winter snow removal should be paved. Less heavily used roads and driveways should be surfaced with gravel. Unneeded dirt roads and driveways should be revegetated.

Snow disposal areas should be located entirely upon high capability land with rapid permeability, should be separated from Stream Environment Zones, and should be contained within berms to avoid surface runoff. The BMP Handbook (208 Plan, Vol. II) includes practices for snow disposal and for road salt storage and application.

The use of deicing salt and abrasives may be restricted where damage to vegetation in specific areas may be linked to their use, or where their use would result in a violation of water quality standards. Required mitigation for the use of road salt or abrasives may include use of alternative substances, and/or changes in the pattern, frequency, and amount of application. Revegetation of parcels may be required where there is evidence that deicing salts or abrasives have caused vegetation mortality. TRPA may enter into MOUs with highway and street maintenance entities to address the use of salts or abrasives in relation to safety requirements.

Retrofit Requirements and the Capital Improvements Program

All governmental agencies responsible for road maintenance are required to bring all roads in the Lake Tahoe Basin into compliance with 208 Plan standards within the 20-year implementation schedule of that plan (by 2007). That is, all existing facilities must be retrofitted to handle the stormwater runoff from the 20-year, 1-hour storm, and to restabilize all eroding slopes.

As noted in the section of this Chapter on remedial programs and offset, remedial controls for the water

quality impacts of past development in the Lake Tahoe Basin are essential for the prevention of further degradation of Lake Tahoe. The Capital Improvements Program (CIP) of the 208 Plan (Vol. IV) is directed toward remediation of erosion and stormwater problems along public rights-of-way. Under the 208 Plan (Vol. I, page 109) federal, state and local units of government and other land management agencies shall be responsible for carrying out the water quality Capital Improvements Program, with oversight from TRPA. Memoranda of Understanding (MOUs) or other agreements between TRPA and the implementing agencies will provide the necessary coordination to ensure implementation. Appropriate roles and responsibilities of the involved agencies will be identified and verified through these agreements. TRPA expects to work with implementing agencies toward periodic revision of the CIP and development and implementation of long-term revenue programs. Minor changes in project descriptions or revenue programs shall not require state certification and federal approval before they take effect, but shall be included in periodic updates of the CIP submitted to the states and USEPA.

Specific CIP projects are proposed in Volume IV of the revised 208 Plan. California CIP projects are summarized in Tables 5.12-1 through 5.12-4. The systems proposed are source controls, which incorporate the methods presented in the Handbook of Best Management Practices (208 Plan, Vol. II). Detailed facilities planning will be required to determine exactly what systems will be put on the ground. Completion of these projects is essential if the load of sediment and nutrients causing deterioration of Lake Tahoe is to be reduced. The cost of completing all erosion and urban runoff control projects will be approximately $300 million in 1988 dollars, requiring development of a phased program for completion. The total cost of projects to be implemented in California is estimated at $204.7 million (1988 dollars), including $18 million for Caltrans projects, $58.9 million for City of South Lake Tahoe projects, $49.8 million for El Dorado County projects, and $78 million for Placer County projects. The CIP incorporates the watershed restoration priorities of the USFS, Lake Tahoe Basin Management Unit, by reference.

The CIP includes a project priority system related to the capability of each watershed to deliver sediment and nutrients to Lake Tahoe. TRPA gives high priority for erosion and runoff control to projects which affect SEZs (particularly wetland and riparian areas), which reduce or repair disturbance of seasonally saturated variable source areas, and which attempt to restore a more natural hydrologic response in the watershed. TRPA will work with the various implementing agencies to incorporate the 208 Plan's priority guidance into their long-range programs and evaluate their programs at regular five-year intervals.

TRPA's financial strategy for implementing the CIP is summarized in Volume VI of the 208 Plan (pages 46-47). It includes commitments to review funding sources, work with state and federal agencies to obtain funding, and to prepare and conduct annual updates of a detailed five-year CIP. Some of the components of this strategy were incorporated into TRPA's 1992 financial plan for 208 Plan implementation. An important element of the strategy is the direction that the Lahontan Regional Board, Nevada Division of Environmental Protection, and TRPA will use their regulatory powers to ensure that local units of government and other local agencies bear a fair share of the costs of erosion and runoff control projects, while recognizing that voluntary cooperation is preferred to mandatory action.

This Basin Plan designates Caltrans as the agency with primary responsibility for implementing erosion control projects on California state highways. The Lahontan Regional Board will monitor Caltrans' progress to ensure that the projects are properly designed and built on schedule. Some state highways are on National Forest lands and are subject to special use permits issued by the Forest Service. The USFS can require correction of erosion problems as part of these special use permits.

The cities and counties have authority to carry out projects on public streets and roads. When these agencies carry out erosion control projects, their responsibilities will include detailed facilities planning, design, construction, and maintenance. The technical and advisory services of the Resource Conservation Districts can be used to help meet these responsibilities. Local governments will have incentives to carry out remedial projects in that future development in their jurisdictions will be phased under TRPA's land use plan (TRPA 1987) depending upon progress under the CIP.

To the extent feasible, this Basin Plan will rely on local governments to construct the erosion control projects required on city and county streets and roads, with financial assistance provided by state and federal grants. Local governments may also establish special assessment districts for the purpose of carrying out erosion and runoff control projects.

Where state transportation departments or local agencies fail to carry out erosion and urban runoff control projects, regulatory programs must be adopted to require them to carry out the projects. These agencies own the roads causing erosion; they can be held responsible for correcting the problem.

In some cases, an oversteepened roadway slope or other erosion problem is not entirely within public ownership. The parties dedicating a public road to a city or county may have failed to designate the entire right-of-way. Waste discharge requirements can be issued to the individual property owner at the same time they are issued to the city or county, making the property owner responsible for those measures required on his property. The city or county could also accept a dedication of the area from the landowner, or establish a special assessment district for the project.